PŮVODNÍ PRÁCE/ORIGINAL PAPER

Texturně neobvyklá Cu sulfidická mineralizace a doprovodné minerály z alpské žíly od Markovic u Čáslavi

Texturally unusual Cu sulphidic mineralization and associated minerals from Alpine-type vein from Markovice near Čáslav

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Abstract

Results of mineralogical study of a Cu-sulphide bearing Alpine-type vein from Markovice quarry are presented in this paper. The Cu mineralization is formed by bornite, chalcopyrite and "chalcocite" developed in an interesting textural arrangement. There occur numerous elongated lenticular "lamellae" of chalcopyrite and sulphur-rich bornite, both covered by tiny "chalcocite" rims, which are arranged along 1-3 crystallographic directions in the bornite host. We interpret this textural arrangement in terms of two cooling episodes (each below ~250 °C) separated by a heating episode (above ~475 °C), which affected originally homogeneous sulphur-enriched bornite. Each cooling episode was associated with partial decomposition of sulphur-rich bornite to chalcopyrite and "chalcocite", whereas during the heating event an opposite process (i.e., synthesis of bornite from chalcopyrite and "chalcocite") took place. An unusual assemblage of accessory Te and Se phases (melonite, frohbergite, native tellurium and clausthalite) enclosed in Cu-sulphides is either product of primary crystallization, or formed from isomorphic admixtures of Se, Te, Ni and Pb possibly present in original bornite during repeated phase transformations and recrystallizations. The studied vein exhibits also unusual chemical composition of early amphibole (ranging from actinolite to magnesiohornblende) and muscovite (rich in "phengite" component) resembling rock-forming minerals of metamorphic rocks than those of a typical Alpine-type vein. We interpret the observed anomalies in terms of an important thermal rejuvenation, which was associated with both phase and chemical re-equilibration of the studied Alpine-type vein. Late (?supergene) phases rimming the Cu-sulphides include geerite, anilite, malachite and Mg-analogue of papagoite.

Key words: *bornite, chalcopyrite, geerite, papagoite, Alpine-type veins, weathering, thermal re-equilibration, Kutná Hora unit, Bohemian Massif, Czech Republic*

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